Warrior Ethos: Analysis of the Concept and Initial Development of Applications

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This research refines and operationalizes the 2003 definition of Warrior Ethos and examines a means for its inculcation into the Army. Specifically, the research considered Initial Entry Training (IET) of enlisted Soldiers as an initial opportunity for the application of potential solutions, although the concepts apply to officer initial military training as well.

The U.S. Army Infantry School Task Force Soldier's 2003 definition of Warrior Ethos (Mission First, Never Quit, Never Accept Defeat, Never Leave a Fallen Comrade) was examined, and further broken down into the values-based attributes exemplified by a Soldier who demonstrates Warrior Ethos. Using a theoretical framework, these attributes were linked to specific behavior, the execution of which represented an operationalization of Warrior Ethos as a complex concept. The desirable behaviors, captured in nine Warrior battle drills, were also considered from the standpoint of barriers or friction to their execution. A tentative methodology for training was then postulated.

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Research Report 1827

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**Infantry Forces Research Unit
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One of the major goals of the Army Chief of Staff in the transformation of the Army is to inculcate Warrior Ethos into Soldiers and leaders. What that means, and how it is to be accomplished, is not particularly clear. This research represents a first step in resolving issues associated with inculcating Warrior Ethos into the U.S. Soldier.

The intent of the research was to analyze the meaning of the term Warrior Ethos, and its component attributes, tenets and behaviors, to determine applicability to Soldiers from their initial military training throughout their military careers. The research described in this report was conducted as a Phase I Small Business Innovation Research project for the U.S. Army Research Institute's Infantry Forces Research Unit at Fort Benning.

The Warrior Ethos definition, as embedded within the current Soldier Creed, is as follows:

I will always place the mission first.
I will never accept defeat.
I will never quit.
I will never leave a fallen comrade.

This report describes the derivative behaviors consonant with Warrior Ethos, as well as potential venues for their inculcation, starting with a Soldier's initial military training events and locales. This preliminary work has been briefed to training developers from the U.S. Army Infantry School Directorate of Operations and Training. The Deputy Chief of the Army's 2003 Task Force Soldier has also been apprised of this research, and the potential enhancements to Army training gained through its application.

BARBARA A. BLACK
Acting Technical Director

WARRIOR ETHOS: ANALYSIS OF THE CONCEPT AND INITIAL DEVELOPMENT OF APPLICATIONS

EXECUTIVE SUMMARY

Requirement:

The purpose of the research was twofold: to refine and operationalize the 2003 definition of Warrior Ethos and to develop and examine means for its inculcation into the Army. Specifically, the research considered Initial Entry Training (IET) of enlisted Soldiers as an initial opportunity for the application of potential solutions, although the concepts apply to officer initial military training as well. This research was performed under a Small Business Innovation Research (SBIR) Phase I contract.

Procedure:

The U.S. Army Infantry School Task Force Soldier's 2003 definition of Warrior Ethos (Mission First, Never Quit, Never Accept Defeat, Never Leave a Fallen Comrade) was examined, and further broken down into the values-based attributes exemplified by a Soldier who demonstrates Warrior Ethos. Using a theoretical framework, these attributes were linked to specific behavior, the execution of which represented an operationalization of Warrior Ethos as a complex concept. The desirable behaviors, captured in nine Warrior battle drills, were also considered from the standpoint of barriers or friction to their execution – to help explain some of the reasons Warrior-like behavior might not be evident in some circumstances.

Findings:

Each of the nine Warrior battle drills could be broken into observable behavioral components, and a means of intervention into the IET identified to encourage this behavior and Warrior Ethos mindset. A tentative methodology for training was postulated.

Utilization of Findings:

The results of this work have been described to the U.S. Army Infantry School Directorate of Operations and Training. The initial results depicted here may be applied to IET or officer training. Using a train-the-trainer procedure, trainers may be made aware of different ways of looking at Soldier behavior, and how they represent an operational application of the definition of Warrior Ethos. Experimental applications could measure changes in behavior over time.

WARRIOR ETHOS: ANALYSIS OF THE CONCEPT AND INITIAL DEVELOPMENT OF APPLICATIONS

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WARRIOR ETHOS: ANALYSIS OF THE CONCEPT AND INITIAL DEVELOPMENT OF APPLICATIONS

The U.S. Army has adopted a set of Army values and as a part of basic training, inculcates initial entry Soldiers with their importance. The values reflect societal beliefs to which most American citizens would ascribe. The values are not Army or combat specific, yet they set a foundation designed to develop right beliefs and responsible actions by the American Soldier. While not unique to the profession of arms, the values are certainly important to the citizen turned Soldier, whose actions within the institution of the Army must reflect the values of the Nation as a whole. The Army values of Leadership, Duty, Respect, Selfless Service, Honor, Integrity and Personal Courage can stand alone.

In contrast to the Army Values, notions of a Warrior Ethos as an overriding credo for the American Soldier provide a unique set of values to complement the seven Army values. The values of a Warrior Ethos would be peculiar to the needs of an Army which is required by the Nation to fight, but at the same time is required to be in consonance with the character, sentiment and beliefs commonly held by the American people. The purpose of a set of values used to underpin or describe an Army level Warrior Ethos may be to ingrain the belief that failure by an Army and its Soldiers is not acceptable while the means to fight exists.

This paper describes the first phase of a multi-phased approach to addressing the area of Warrior Ethos. This work, done under the auspices of a Small Business Innovative Research (SBIR) contract, centers on Warrior Ethos for initial entry Soldiers, but can easily be expanded to the broader force to include officer training and reinforcement training for personnel already in units. The first steps of the process focused on definition of Warrior Ethos, a dissection of the terms and tenets of Warrior Ethos into their component parts, together with in depth definitions of each of the tenets. Potential arenas for training-based Warrior Ethos interventions were identified, and plans laid for their implementation.

Warrior Ethos is at the heart of the expectations of a warrior, a Soldier who performs required duties in a harsh and unforgiving environment which directly involves killing and also provides potential for being killed. Warrior Ethos is implicit in the Army's Code of Conduct; it is explicit in the historical records of the Army's combat heroes, particularly those recognized by the Congressional Medal of Honor, the Distinguished Service Cross and the Silver Star.

Current Understanding of Warrior Ethos

The *Warrior Ethos Staff Primer* (Training and Doctrine Command, 2003), presented to Chief of Staff of the Army (CSA) GEN Peter J. Schoomaker, is a seminal document from the Task Force Soldier (Task Force Soldier, 2003) within the Training and Doctrine Command (TRADOC). The basis of the work is the motivational principle that transforms American Soldiers into Warriors – the Warrior Ethos. Newly re-defined and adopted by the Army in November, 2003, the Warrior Ethos is the heart and central focus of the new Soldier's Creed (Training and Doctrine Command, 2003a). The Creed is depicted in Figure 1, and the tenets of Warrior Ethos are completely embedded therein.

Soldier's Creed

I am an American Soldier.

I am a Warrior and a member of a team. I serve the people of the United States and live the Army Values.

I will always place the mission first.

I will never accept defeat.

I will never quit.

I will never leave a fallen comrade.

I am disciplined, physically and mentally tough, trained and proficient in my warrior tasks and drills. I always maintain my arms, my equipment and myself.

I am an expert and I am a professional.

I stand ready to deploy, engage, and destroy the enemies of the United States of America in close combat.

I am a guardian of freedom and the American way of life.

I am an American Soldier.

Figure 1. The Soldier's Creed

The Warrior Ethos helps to ensure that all Soldiers, regardless of rank, branch or military occupational specialty, are prepared to engage the enemy in close combat, while serving as a part of a team of flexible, adaptable, well-trained and well-equipped Soldiers. Warrior Ethos is a part of everything the Army does. It is the basis of leader decision-making, and has an impact on Soldiers at every level from the most senior General Officer down to the most junior Soldier. Warrior Ethos defines the American Soldier.

The concept of Warrior Ethos is not difficult to understand; far more difficult are decisions on how to ensure the effective dissemination of the overall ethic of a Warrior. Initial Military Training begins a process of immersive inculcation of Army values to all new Soldiers. Trainees learn about the Army and are exposed to attitudes and behavior associated with Warrior Ethos. The challenge is to internalize Warrior Ethos to the greatest extent possible during the limited timeframe and then to sustain it well beyond this initial training. A Soldier's lifestyle and daily behavior must reflect Warrior Ethos. Warrior Ethos must continue with the Soldier to his or her advanced individual training program location, then to the unit. The importance of sustaining Warrior Ethos is indicated in vignettes which describe actions that resulted in award of the Congressional Medal of Honor (U.S. Army Center of Military History, n.d.).

Private First Class Melvin L. Brown, U.S. Army, Company D, 8th Engineer Combat Battalion exhibited extraordinary heroism on 4 September 1950, and demonstrated the first three tenets of Warrior Ethos.

While his platoon was securing Hill 755 (the Walled City), the enemy, using heavy automatic weapons and small arms, counterattacked. Taking a position on a 50-foot-high wall he delivered heavy rifle fire on the enemy. His ammunition was soon expended and although wounded, he remained at his post and threw his few

grenades into the attackers causing many casualties. When his supply of grenades was exhausted his comrades from nearby foxholes tossed others to him and he left his position, braving a hail of fire, to retrieve and throw them at the enemy. The attackers continued to assault his position and Pfc. Brown weaponless, drew his entrenching tool from his pack and calmly waited until they 1 by 1 peered over the wall, delivering each a crushing blow upon the head. Knocking 10 or 12 enemy from the wall, his daring action so inspired his platoon that they repelled the attack and held their position. [*Mission first, never accept defeat, never quit*]

A more recent and compelling example of the four tenets of Warrior Ethos is that describing the 3 October, 1993 actions and extraordinary heroism of Master Sergeant Gary I. Gordon and Sergeant First Class Randall D. Shughart. The citations show that Master Sergeant Gordon and Sergeant First Class Shughart distinguished themselves by actions above and beyond the call of duty while serving as Sniper Team Leader, and Sniper Team Member, United States Army Special Operations Command with Task Force Ranger in Mogadishu, Somalia.

Master Sergeant Gordon's sniper team provided precision fires from the lead helicopter during an assault and at two helicopter crash sites, while subjected to intense automatic weapons and rocket propelled grenade fires. When Master Sergeant Gordon learned that ground forces were not immediately available to secure the second crash site, he and Sergeant First Class Shughart unhesitatingly volunteered to be inserted to protect the four critically wounded personnel, despite being well aware of the growing number of enemy personnel closing in on the site. After their third request to be inserted, they received permission to perform this volunteer mission.

Equipped with only sniper rifles and pistols, Master Sergeant Gordon and Sergeant First Class Shughart, while under intense small arms fire from the enemy, fought their way through a dense maze of shanties and shacks to reach the critically injured crew members. They pulled the pilot and the other crew members from the aircraft, establishing a perimeter which placed them in the most vulnerable position. They killed an undetermined number of attackers while traveling the perimeter, protecting the downed crew. Their actions saved the pilot's life. Sergeant First Class Shughart continued his protective fire until he depleted his ammunition and was fatally wounded. After his own rifle ammunition was exhausted, Master Sergeant Gordon returned to the wreckage, gave a rifle with the last five rounds of ammunition to the dazed pilot with the words, "good luck." Then, he radioed for help and armed only with his pistol, Master Sergeant Gordon continued to fight until he was fatally wounded.

The preceding vignettes depict extreme examples of Warrior Ethos: "I will always place the mission first. I will never accept defeat. I will never quit. I will never leave a fallen comrade." It is clear that Soldiers immediately recognize this when such historical deeds are described to them. However, the average Soldier is not continually exposed to conditions within which Warrior Ethos is clearly manifested and do not frequently experience the conditions that foster Warrior Ethos. This is the case whether they are in garrison or in a combat situation. There is a need and an opportunity to develop training curricula which foster the development and sustainment of Warrior Ethos. There is a collateral need and opportunity to operationalize

the definition of Warrior Ethos so that progress toward achievement of such training objectives can be measured.

Purpose

The purpose of this report is to document, expand and clarify the concept of Warrior Ethos, to present a foundation for the development of a training package to inculcate Warrior Ethos into initial entry training, and to show how it can be done. A future report will document the trial implementations and summarize the recommendations for further research that could, in principle, be conducted.

Approach

The objectives of the project were to review, analyze and define Warrior Ethos and to determine the most likely sites for training interventions. A literature review was conducted to provide traceable conclusions about Warrior Ethos and to show why a Warrior Ethos training package should be developed. A front-end analysis determined the components of the constructs associated with Warrior Ethos, the fundamental attributes embodied therein, and environments suitable to enhance these values. Training techniques were identified to determine if and how the attributes of Warrior Ethos can be imparted to Soldiers. Discussion of the performance metrics and venues was initiated. Warrior Ethos must include Combat Arms, Combat Support, and Combat Service Support operations. The basic combat training (BCT) environment thus provides a logical entry level training site, whether it is the gender-integrated BCT found at, for example, Fort Jackson, SC, or the One Station Unit Training (OSUT) at Fort Benning, GA .

The final step of the Phase I SBIR is to demonstrate viability of the concept that Warrior Ethos can be inculcated through a training package, initially one directed toward initial entry Soldiers. This ensures a low-risk plan for development of a Warrior Ethos training package in a potential Phase II SBIR. Phase II would involve spiral development of feasible training interventions, Train-the-Trainer training support packages for Soldiers, and development of a corresponding commercialization plan.

Expansion of the Definition of Warrior Ethos

The perspective of the CSA on Warrior Ethos (see, e.g., Training and Doctrine Command, n.d.) and its centrality in the Soldier's Creed suggests that Warrior Ethos is a mindset of commitment. This is taken as a *first principle* in the ongoing refinement of the understanding of Warrior Ethos. In particular, it points to persistent causal factors in an individual's attitude or disposition, which strongly influence the individual's perception of a situation and actions in a situation. Moreover, it indicates a disposition of being intellectually or emotionally motivated to think, perceive, act, or forbear with respect to something or someone to which the individual is bound beyond the task at hand (see also Field Manual (FM) 7-1, *Battle Focused Training*, Department of the Army (DA), 2003.). Treatment of Warrior Ethos, or its inculcation, must address the cognitive and social implications of commitment.

In promulgating an appreciation of Warrior Ethos in the *Warrior Ethos Staff Primer* (Training and Doctrine Command, 2003a), the CSA has endorsed the four specific principles or elements of doctrine, which herein are referred to as tenets of Warrior Ethos. The tenets are:

- place the mission first
- never accept defeat
- never quit
- never leave a fallen comrade

These tenets reveal the nature of the Warrior Ethos commitment. There is an explicit commitment to one's fellow Soldiers. The tenets also imply a commitment to an organization, to a group of whatever size is necessary to execute a mission successfully, insofar as the mission is the raison d'être for the organization or group. The groups to which a Soldier must be committed, and that influence the Soldier's mindset, can be nested. Sometimes the commitment can be described as to a single individual, another member of a team, or to the elements within a squad, to the platoon or company within a larger operational unit, all the way up to the Army as a whole, and ultimately to the Nation. The guidance of the CSA suggests that Warrior Ethos requires an understanding by all Soldiers of the interrelationships of such nested groups, not only with respect to the objectives that smaller groups derive from larger groups, but also because of the values that sustain larger groups (e.g., an Army, a nation). Understanding the relevance of one's thoughts and actions to this social context increases the likelihood that one's thoughts and actions will be motivated by something larger than oneself.

The *Warrior Ethos Staff Primer* (Training and Doctrine Command, 2003) has implications for each of the areas of Doctrine, Organization, Training, Materiel, Leader Development and Education, Personnel, and Facilities (DOTMLPF) although the primary focus here is doctrine, training, leadership and personnel. A full definition of Warrior Ethos requires identification and assessment of these implications. Part of the mission of the recently concluded Task Force Soldier was to review, analyze and make recommendations about training as a mechanism for implementing Warrior Ethos or Warrior Spirit (Task Force Soldier, 2003). The Task Force Soldier mission required coordination of such proposals with other Soldier initiatives and addressing life long learning for Soldiers (see also FM 7-1, DA, 2003, Para 1-6). This mandate implied a holistic approach to training in which different types or phases of training, as well as education, are sequenced and integrated with respect to the objective of inculcating Warrior Ethos. It also made possible this approach to solving the problem of sustaining the elements or tenets of Warrior Ethos beyond initial training and on into the Soldier's career.

The Tenets of Warrior Ethos

Mission First. The concept of "mission first" is an expression of priority of tasks. The prioritization of tasks occurs on the battlefield just as it does in training and allows Soldiers and Leaders to rank order or prioritize what must be done. The foremost task is the mission of an individual Soldier or that of the unit. The concept of "mission first" is based on the oath of office or enlistment and the Uniform Code of Military Justice (UCMJ). All Soldiers begin their career with the swearing in ceremony where they recite the oath of enlistment or commissioning. The oaths are shown below.

The current oath of enlistment is: "I, _____, do solemnly swear (or affirm) that I will support and defend the Constitution of the United States against all enemies, foreign and domestic; that I will bear true faith and allegiance to the same; and that I will obey the orders of the President of the United States and the orders of the officers appointed over me, according to regulations and the Uniform Code of Military Justice. So help me God." (Title 10, US Code; Act of 5 May, 1960 replacing the wording first adopted in 1789, with amendment effective 5 October, 1962).

The current oath of office is: "I, _____ (SSAN), having been appointed an officer in the Army of the United States, as indicated above in the grade of _____ do solemnly swear (or affirm) that I will support and defend the Constitution of the United States against all enemies, foreign or domestic, that I will bear true faith and allegiance to the same; that I take this obligation freely, without any mental reservations or purpose of evasion; and that I will well and faithfully discharge the duties of the office upon which I am about to enter; So help me God." (DA Form 71, 1 August, 1959, for officers.)

If an individual interprets the oath as a mission statement, it implies an obligation to follow civilian and military leaders in the execution of duties. This oath creates a framework for putting the mission first, swearing to "support and defend the Constitution of the United States."

The leader's challenge is to accomplish the mission while at the same time looking out for the welfare of the Soldiers. Soldiers must be available to assist the leader in accomplishing the mission. Therefore, mission and Soldiers are both important. Placing the "mission first" requires prioritization of competing tasks and requirements, including those not directly related to the military mission. Soldiers must balance their learned needs (family, safety, comfort, etc.) and de-conflict these needs with the requirements of the mission. This prioritization enables Soldiers to accomplish multiple difficult and sometimes selfless tasks concurrently, with the end state result of accomplishment of the primary mission as well as multiple sub-tasks. Delaying actions because of conflicting priorities/requirements does not mean that the Soldier is not placing the mission first; it indicates the Soldier is multi-functional and balanced and prioritizes. Soldiers historically have sacrificed in order to accomplish their mission.

Never Accept Defeat. The concept of not accepting defeat is found in the Code of Conduct. The Code requires every Soldier to fight and not to surrender of his or her own free will. All Soldiers are expected to fight an enemy for as long as the Soldier and the unit have the means to resist. The idea of not accepting defeat does not necessarily include censuring failure. The U.S. Army is discrete in the use of the terms failure and defeat. In practice the Army values Soldiers and Leaders, who if temporarily defeated in battle, will seek ways and means to continue the fight and achieve victory. Examples abound in events of U.S. Army history where Soldiers and units seemingly defeated, continue to fight, or in some cases disengage, to live to fight another day. This too is an exemplar of not accepting defeat.

Training methodologies must stress upon the Soldier that the individual is never removed from the fight so long as the Soldier has a prudent means to resist and carry the fight to the enemy. This does not mean that we train Soldiers to conduct suicide missions as currently

practiced by our enemies conducting the war on terror. We operate within the confines of the Rules of Land Warfare, regardless of the actions of our enemy.

Current exercise rules of engagement (EXROE) used in most field training exercises dictate that when a Soldier becomes a simulated casualty, the Soldier immediately removes him/herself from the fight. These narrow training-based EXROE may impede the development of the Warrior Ethos desired during real enemy contact where the Soldier continues to press the fight toward the enemy until the Soldier is no longer physically capable of resistance and is forced to stop. Training methodologies as applied in typical training environments must reward Soldiers for creative thinking as they face imminent defeat. What cunning and adaptive thinking does the Soldier demonstrate that enables the ability to overcome adversity?

Never Quit. When does a Soldier terminate the fight and surrender his force to a numerically superior enemy? When is it prudent to save your Soldiers rather than to commit the needless sacrifice of their lives? There are examples throughout history in which commanders surrendered their force to a superior enemy force. Having surrendered, as demonstrated repeatedly by Prisoners of War, it is possible to continue to resist one's captors for a great length of time. The elements of physical toughness, mental acuity and mental toughness (not succumbing to mind games), and spiritual fitness (faith in the unit, leaders, and a higher being) help inculcate the "never quit" tenet. This toughness enables the Soldier to continue to pursue the mission against seemingly insurmountable odds.

Never quitting implies not letting oneself down and not letting buddies, subordinates and superiors down. This comes from the belief that others depend on you and that to quit will endanger your friends. Wong, Kolditz, Millen, and Potter (2003) provide insights into this phenomenon, particularly that the notion of quitting will endanger the members of the small unit. They noted that social cohesion serves two purposes in combat motivation. First, because of the close ties to other Soldiers, the unit cohesion places a burden of responsibility on each Soldier to achieve group success and protect the unit from harm. The second role of cohesion is to provide the Soldier the confidence and assurance that someone he/she could trust was, in effect, watching out for them.

Never Leave a Fallen Comrade. Soldiers enter into otherwise perilous situations because they have trust and confidence in their country and their leaders that they will not be abandoned. A classic example of efforts made to recover fallen comrades is that of Joint Task Force Full Accounting, established in 1992, and based on 1973 accounting efforts after Viet Nam. It may not be possible to recover injured or killed comrades in the heat of battle, but we must return and pursue their recovery at the earliest opportunity and continue this mission until closure is obtained, until all have been retrieved. The Central Identification Laboratory in Hawaii continues to recover remains of Soldiers lost in action during World War II and Korea. This relentless pursuit to achieve closure for family members and fellow Soldiers provides the individual Soldier the peace of mind required to maintain the "never quit" posture while being assured that if wounded or killed, "never leave a fallen comrade" will prevail.

Faith in Themselves and Their Comrades. Wong, Kolditz, Millen, and Potter's conversations with Soldiers (2003) showed that once they are convinced that they are being

looked after, and to the maximum extent possible, their own personal safety will be assured by others, they feel empowered to do their job. They can maintain the fight, knowing they are not alone. This discovery is central to this tenet because it relates to protecting each other, and provides some relief from stress. Soldiers want to know that if they are wounded in action their buddies and unit will fight to prevent their capture. They expect to receive medical treatment in a timely manner, and if needed, Soldiers and their families expect their remains to be repatriated at some point after the battle or conflict. All of this provides a level of comfort and trust among Soldiers that is essential to combat performance at the small unit level.

Clarifying the Definition of Warrior Ethos

Current thinking about Warrior Ethos is reminiscent of well-established beliefs about leadership. The historical lessons learned about Army leadership provide a solid grounding for development of a strategy to inculcate Warrior Ethos in all Soldiers. In addition, promulgation of certain attributes of leadership to all Soldiers has implications for leader training as well as basic training (see e.g., FM 7-1, DA, 2003, Para A-2, A-15). For these reasons, special consideration was given to lessons learned as articulated in FM 22-100 *Leadership* (DA, 1999). Key considerations are summarized below:

"The will of Soldiers is three times more important than their weapon" (Col. Dandridge M. Malone, *Small unit leadership: a commonsense approach*, as quoted in FM 22-100, DA, 1999, p. 2-11). Will is especially important under adverse external conditions. In such situations, the perseverance to complete the mission must come from an inner resolve that derives automatically from a fundamental commitment to something larger than oneself.
"The core of a Soldier is moral discipline. It is intertwined with the discipline of physical and mental achievement. Total discipline overcomes adversity, and physical stamina draws on an inner strength that says 'drive on' " (Former Sergeant Major of the Army William G. Bainbridge, as quoted in FM 22-100, DA, 1999, p. 2-12). Self-discipline and will manifest in similar ways and under similar conditions. *Self-discipline* refers more to the activities of thinking and acting, the means to the end, while *will* refers more to the end objective. Self-discipline thus is linked with "mastery." Mastery requires hard training that exposes individuals to adverse external conditions often enough to develop a "habit of doing the right thing."

"The leader must be an aggressive thinker—always anticipating and analyzing. He must be able to make good assessments and solid tactical judgments" (BG John T. Nelson II, as quoted in FM 22-100, DA, 1999, p. 2-12.). Initiative is especially important in ambiguous situations. It requires adaptability in the means to the end without undue risk to achieving the end objectives. Initiative thus requires a keen understanding of a commander's higher-level objectives or intent and the ability to differentiate this from the a priori plan to achieve the objectives. This capacity must be developed through experience with situations in which one is allowed some license to innovate and which foster an appreciation of means-end relationships among multiple actions and multiple objectives.

"I learned that good judgment comes from experience and that experience grows out of mistakes" (General of the Army Omar N. Bradley, as quoted in FM 22-100, DA, 1999, p. 2-13). *Judgment* is closely related to initiative. Successful initiative depends on good judgment.

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Judgment refers to the ability to deal with conflicting demands, conflicting information, and ambiguous situations. It must be developed through experience, some trial and error, reflection on consequences of one's actions for oneself and others, and an acceptance of the responsibility for one's actions.

There is an important distinction between self-confidence and false confidence. *Self-confidence* comes from an understanding of one's *capabilities and limitations*. Development of such self-knowledge comes from experience with a variety of situations in which one is required to demonstrate initiative and exercise judgment. The attendant ability to deal with the unknown manifests itself in a demeanor that tends to control doubt and reduce anxiety in oneself and others in adverse conditions (i.e., when it is most needed). The term self-knowledge is used to avoid confusion with the broader self-awareness considered important for leadership and especially for strategic decision making (see, e.g., Army Training and Leadership Development Panel, n.d.). Nevertheless, it will be useful to consider implications of work on self-awareness in leader training for self-knowledge in basic training.

"It is not genius which reveals to me suddenly and secretly what I should do in circumstances unexpected by others; it is thought and meditation" (Napoleon Bonaparte, as quoted in FM 22-100, DA, 1999, p. 2-14). There are three important and related issues pertaining to *intelligence*. First, the value of experience is increased immeasurably by reflecting on lessons learned, conducting such analyses in the context of values and other military principles, and extrapolating them to various what-if scenarios. This is the basis of the After Action Review (AAR). Additionally, application of one's intelligence in this way allows any person to become smarter, and this is more important than the fact that some individuals may be smarter than others. Finally, there should be a commitment to continuous intellectual development in one's job or responsibilities.

Individuals bring different talents to a situation. The special talents of individuals can be well utilized if teams are assembled so that team members balance and supplement one another and if there is an appreciation by each team member of the complementary skills of all team members. This increases the effectiveness of teams in achieving common objectives. In addition, such awareness increases the ability to understand the cultural differences of adversaries and non-combatants, which, in turn, make the Army a more effective force.

Again citing the Army's Leadership Manual, FM 22-100 (DA, 1999), *cultural awareness* is part of a mutual respect that is at the heart of a team identity. Such respect fosters appreciation for complementary talents and assignments within a team. The team identity goes beyond this appreciation, though, to include trust in the selflessness of one's comrades in the most difficult of times. This is important not only because it increases the adaptability and effectiveness of teams, but also because it a key Army value that should be shared by all members of this culture.

Warrior Attributes Derived from the Tenets of Warrior Ethos

The review of current thinking about Warrior Ethos and leadership provides a foundation for an analysis of the Warrior Ethos that helps build connections between the associated military considerations and current understanding of related concepts in the scientific community. This

analysis, in turn, will provide for the development of a training curriculum to inculcate Warrior Ethos. It will involve the development and integration of new training concepts to foster "life long" training and education. This approach requires that identified needs and solutions be traced to scientific theory. It also requires that solutions can be implemented and that hypotheses about solutions (i.e., their relationship with needs) can be examined empirically with methods which can be replicated by others. The intent was thus to identify a set of concepts relating to Warrior Ethos that referred, as explicitly as possible, to individual dispositions (i.e., cognitive or social-psychological attributes) which could be addressed, as directly as possible, with training interventions.

Seven attributes of individual psychology and behavior have been identified as key cross-cutting elements of the four tenets of Warrior Ethos:

- Perseverance
- Ability to Set Priorities
- Ability to Make Tradeoffs
- Ability to Adapt
- Ability to Accept Responsibility for Others
- Ability to Accept Dependence on Others
- Motivated by a Higher Calling

These attributes of Warrior Ethos are further described in the following paragraphs along with representative measurement concepts which could be developed into qualitative and quantitative methods of validation and verification for the training package and, if operationally viable and feasible (given time and resource constraints), would be developed in parallel with the associated training concepts.

Perseverance. Warrior Ethos requires an ability to work through adversity, to persevere at all times, and to embody each of the four tenets of Warrior Ethos (*mission first - never quit - do not accept defeat - leave no comrade behind*). Soldiers will encounter friction, in the form of resistance or impediments to performance, during the execution of planned tasks. Often, as a result of such external obstacles, it will appear to be easier to quit than to complete the task at hand. Individuals must readily and reflexively draw on sources of inner strength to endure adverse conditions and persist, even when it is not immediately obvious that the objective can be achieved. In principle, external conditions and accompanying stressors can be manipulated in a manner that can be replicated in the training environment, with measurable behavioral effects (e.g., choices).

Ability to Set Priorities. Warrior Ethos requires an ability to prioritize tasks for mission accomplishment if *mission first* is to be its first tenet. Every Soldier will have multiple tasks to perform on a daily, hourly and, sometimes, minute-by-minute basis. This necessitates the prioritization of work based on an understanding of what is most important to least important in the context that all specified and implied tasks must be performed. In principle, it ought to be possible to shift or change the relative importance of specific training events or tasks to provide measurable behavioral effects to show the ability to prioritize.

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Ability to Make Tradeoffs. Warrior Ethos (*mission first, never accept defeat*) requires the ability to make trade-offs in the application of tactics, techniques and procedures. Every battlefield situation will present options with differing sets of opportunities and penalties if decisions are poorly made. Frequently there are no right answers to any given situation, but recognition of consequences of behavior must be gained through experience. Conflict and synergy among task demands can be manipulated in a manner that can be replicated in a scripted training scenario, with measurable behavioral effects and opinions.

Ability to Adapt. Warrior Ethos requires adaptability, by smooth reaction, to changes in mission and unexpected, often unpleasant, surprise (*never quit, never accept defeat*). A change in mission can be as disruptive to the expected flow of events as a surprise created by the enemy, weather or unfamiliar terrain. Each will either further constrain or relax available options for mission accomplishment. Soldiers must understand the significant constraints but continue to seek ways to accomplish the mission with a minimum of friction or disruption. In principle, these external constraints and friction can be manipulated and replicated (e.g., the conditions in which tasks are executed) to provide behavioral effects and opinions that can be measured.

Ability to Accept Responsibility for Others. Warrior Ethos requires acknowledgement and acceptance that each Soldier is counted upon by other Soldiers to perform his/her mission and tasks (*never quit, never leave a fallen comrade*). Any failure to perform by one Soldier means that another Soldier must assume that workload. This is not taken lightly if an individual is deemed capable of performing but fails to do so. On the other hand, a Soldier who continues to perform the mission despite being incapacitated by accident or enemy action is a team member who is held in high esteem by others. In principle, opportunities or needs to demonstrate such reliability can be manipulated in a manner that can be replicated (e.g., established at well-defined points in the training event) and with consequent behavior and opinions that can be measured.

Ability to Accept Dependence on Others. Warrior Ethos connotes the capacity of each Soldier to rely on fellow Soldiers to accomplish missions and tasks. A Soldier must recognize that he or she depends on comrades for assistance and for personal security. Teamwork is important not just to get the mission accomplished but to do so in such a way that provides some assurance that the individuals of the team survive contact with the enemy (or severe weather or inhospitable terrain), in order to fight again. In principle, opportunities or needs to demonstrate reliance on others can be manipulated in a manner that can be replicated (e.g., established at well-defined points in the training event) and with choices that can be measured. As an individual develops Warrior Ethos and primary identity with a team, responsibility to others presumably becomes inseparable from reliance (dependence) on others. At the outset of training, however, personal attributes may need to be addressed separately to ensure full understanding.

Motivated By a Higher Calling. Warrior Ethos implies a primary motivation derived from the values of the Army and belief in the cause for which the Army fights – Duty, Honor, Country. It is important for Soldiers to understand why they are fighting and for them to believe that it is right. Higher calling cannot be tested experimentally in any obvious way but, in principle, it is measurable in terms of opinions, attitudes and understanding about the meaning of or reason for the individual Warrior skills and tasks as well as collective drills and objectives.

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The putative *Warrior Attributes* described above fill the gap between the tenets of Warrior Ethos on the one hand and specific observable events and behavior on the other (see Figure 2). They are the intervening variables which provide a closer link between what individuals must do and what individuals must be to exemplify certain values. In addition, they help reveal traceable relationships among the tenets of Warrior Ethos; historically relevant facts about exemplary deeds and role models; and training scenarios which enable individuals to observe, display, and understand value-driven behavior as such. This facilitates the development of interventions that fill gaps between training and education in pursuit of a holistic approach to inculcation of Warrior Ethos.
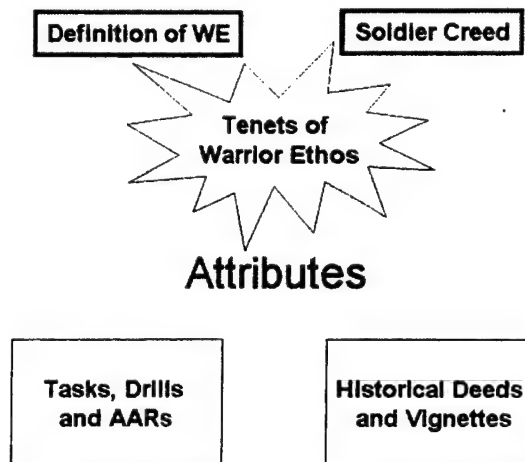

Figure 2. A holistic approach to Warrior Ethos tenets, attributes and behavior.

Relationships of Warrior Tasks to Warrior Battle Drills

Two exigencies for work on Warrior Ethos are ostensibly conflicting. One is the attempt to be concrete and specific, with a sufficiently sharp focus so that development of specific training interventions is feasible. The other is to provide a path for development of training interventions that can be utilized in as broad a range of scenarios and as broad a population of Soldiers as possible. A solution to these apparently conflicting demands is to organize training interventions around the individual tasks and collective drills that the Army considers to be important for all Soldiers and relevant to combat (i.e., skills considered important for a Warrior).

In this sense, the approach is analogous to a Functional Area Analysis (FAA) in the Joint Capabilities Integration and Development System (JCIDS) (CJCSI 3170.01C, 2003; CJCSM 3170.01, 2003). While JCIDS often is viewed as a methodology for developing military capabilities in the broadest sense, it is a logical and coherent methodology for development of capabilities and requirements at almost any scale. For capabilities in the narrow (or even colloquial) sense of the term, the analysis generally will be highly selective or focused. In all cases, however, the JCIDS methodology ensures an understanding of the domain of analysis (i.e., what it addresses and what it does not address) and thus facilitates understanding of its principled selectivity or focus as such.

The intent of an FAA is to identify the operational tasks, conditions, and standards needed to achieve the military objectives. To guide the Warrior Ethos FAA, the following "Warrior Drills" (from the Task Force Soldier list of battle drills, and ARTEP 7-8-Drill, DA, 1993; see Army Study Guide, 2004a) were used to identify potential training interventions for the initial training environment:

- React to contact (visual, improvised explosive device, direct fire, to include rocket propelled grenade)
- Avoid ambush (every Soldier a sensor)
- React to ambush (blocked and unblocked)
- React to indirect fire
- React to chemical attack
- Break contact
- Dismount a vehicle
- Evacuate injured personnel from vehicle
- Secure at a halt

These *Warrior Drills* provide a foundation for development of specific objectives for training scenarios. Traditional basic combat training programs of instruction focus on react to contact and ambush, and reach to chemical attack. The expanded list of Warrior drills helps place the tasks of individual Soldiers (as well as the team) in a sufficiently rich context to identify meaningful consequences of individual behavior.

The next step is to begin to identify relevant tasks that both require and foster the development of basic Soldier skills. Such tasks and their relationship to collective drills inform development of the tactical details that are the core of each training scenario. A resource from which such tasks can be chosen non-arbitrarily is the *Warrior Core Tasks* that have been provided by the 2003 Task Force Soldier (Army Study Guide, 2004b).

Relationships of Warrior Tasks to Warrior Battle Drills

The analysis of Warrior Ethos and associated review of relevant literature indicates that Soldier attitudes and values should be understood in terms of their manifestations in interactions among Soldiers, interactions between Soldiers, leaders and the environment, and the implications of these part-whole relationships for performance of Warrior Drills. However, neither the Warrior Drills nor the Warrior Tasks are sufficiently specific to indicate what these interactions are. Consequently, team-oriented behavior of individuals that should be expected in the performance of each Warrior Drill and that is, in principle, observable was identified. Examples of such "desired responses" are provided in the following sections for Warrior Drills.

Warrior Ethos can be understood in terms of personal attributes that foster values in the team as such and in team objectives. Thus, there should be a clear relationship between Warrior attributes and desired responses of individuals in Warrior Drills. The initial identification of such relationships also is summarized in the following sections.

A consistent theme throughout the review of current thinking about Warrior Ethos is the importance of individual and team performance under adverse conditions. This theme is important because it ensures that the analysis will be grounded in values that are generally considered to be important in the military. Without the context of stressful conditions, observations or proclamations about Warrior Ethos are merely an academic exercise. Real Warrior Ethos is apparent in the heat of battle, in the accounts of heroism that are celebrated in military history, and in the intentionally rare and highly selective recognition of individuals in military ceremonies. This observation implies that there are strict limitations on the inculcation of Warrior Ethos outside of combat. Nevertheless, "hard training" can prepare individuals to make this kind of developmental leap, the evidence of which is possible only in a combat situation.

The difficulty or stress of training can be manipulated through the conditions under which training is conducted. Conditions that relate rather directly to the achievement of collective objectives will be especially relevant to the development and manifestation of Warrior Ethos. Friction, for example, is something that impedes the appropriate response or behavior. Therefore, an important focus in the development of a training curriculum for Warrior Ethos is to identify sources of friction that can be introduced and, to some extent, controlled in a training scenario. Control of friction can be focused on points in a training scenario which are most sensitive to the behavior of individuals (e.g., choices, actions, interactions) and for which the consequences are most profound (e.g., effects on other individuals, success of the mission). This would tend to emphasize the importance of human strength and resolve relative to the fine line between team success and failure. It would make more salient the opportunities for development and manifestation of Warrior Ethos. Potential sources of friction are identified in relation to each of the Warrior Drills. However, an additional and pervasive source of friction is time – the time it takes to train-the-trainer, and the time it takes to change time-honored procedures and policies – which may preclude implementation of many desired training and behavioral changes.

One of the nine Warrior Drills is detailed in the sections below. For this drill, supporting Warrior Tasks are provided. For example, as shown in Table 1, for Warrior Drill 1, React to Contact (visual, improvised explosive device [IED], direct fire [includes rocket propelled grenade - RPG]), there are potentially seventeen types of potential supporting behavior.

Table 1
Behavior Associated with Warrior Drill 1 - React To Contact

React to direct fire (dismounted and mounted)	Correct malfunctions of a machinegun
Qualify with assigned weapon	Prepare/operate a vehicle in a convoy
Correct malfunctions with assigned weapon	Engage targets during an urban operation
Engage targets using night vision sight	Employ hand grenade
Engage targets using an aiming light	Move under direct fire
Engage targets with an M240B machinegun	Select temporary fighting position
Engage targets with an M60/M249 machinegun	Use visual signaling techniques
Engage targets with an M2 machinegun	Perform voice communications (SITREP/ SPOTREP)
Engage targets with an MK19 machinegun	

This behavior implies potential tasks, and comprises other potential behavior or subtasks that may or may not indicate Warrior Ethos. For each drill, there is possible Soldier behavior that is consistent with the attributes of Warrior Ethos, and other potential behavior that does not reflect Warrior Ethos. Cross-walking this potential observable behavior with Warrior Ethos tenets and the barriers/friction (what impedes appropriate responses; actions inconsistent with Warrior Ethos) to performance of the Warrior Ethos-like behavior helps provide a context for measurement of Warrior Ethos.

An example of this is shown at Table 2 where the drill "React to Contact" is broken down into its desired responses. The correct or desired responses include the need to immediately **return fire and seek cover, report, fight through the contact, consolidate, reorganize, and continue the mission.** [Note that Table 2 starts below, and extends continuously over several pages without breaks, to better depict tactical implications, attributes of Warrior Ethos, and the sources of friction (impediments to performance) for the behavior demonstrating Warrior Ethos.]

Table 2
React to Contact

Soldier immediately returns fire		
Tactical Implications	Attributes of Warrior Ethos	Friction
Increased probability the enemy is killed or suppressed because Soldier immediately returns fire.	Prioritizes tasks for mission accomplishment by immediately returning fire. Exhibits Army Values of Loyalty to unit & other Soldiers; & Personal Courage by facing fear & danger. *Never accept defeat.* Soldier realizes rapidly killing or suppressing enemy is most important task.	Lack of familiarity with individual weapon, sight & munitions, or hesitation to engage because of not being sure of the target, or target location, or indecisiveness resulting from ROE.
Increased likelihood that speed & volume of return fire surprises the enemy because of the violence of Soldier's reaction.	Makes tactically smart trades between personal safety (moving to cover & concealment while shooting back) versus moving to cover & concealment then returning fire. *Never accept defeat.* Soldier realizes enemy has advantage unless his violence & speed of reaction overwhelm the enemy.	The surprise & confusion created by enemy fire overwhelm Soldier.
Reduced friendly casualties because Soldier kills or suppresses the enemy thereby reducing or eliminating the enemy's ability to engage the friendly force.	Acts with responsibility to fellow Soldiers by immediately opening fire to kill or suppress the enemy. *Never accept defeat.* Soldier realizes rapidly killing or suppressing the enemy will minimize need to deploy & thereby divert unit from original mission.	Placing the protection of buddies ahead of oneself.
Reduced need for unit to deploy because of swift action of Soldier to kill or suppress the enemy. If the unit does deploy the duration of the deployment is reduced allowing the unit to continue its mission.	Exhibits adaptability by smooth reaction to surprise by immediately returning fire. *Never accept defeat.* Soldier realizes rapidly killing or suppressing enemy will minimize need to deploy & thereby divert unit from original mission.	Tension between leaders & followers. Leaders more likely to think of consequences to the unit.

Soldier seeks cover		
Tactical Implications	Attributes of Warrior Ethos	Friction
Increased probability Soldier & unit survive the contact as a result of returning fire while	Makes tactically smart trades between personal safety (moving to cover & concealment while	Tension between taking cover & returning fire.

moving to cover.	shooting back) versus moving to cover & concealment then returning fire. *Never accept defeat.* Soldier recognizes shooting while moving increases his probability of survival.	returning fire.
Reduced probability of friendly casualties because the enemy is killed or suppressed & the Soldier moves to a covered position where protected from the enemy's fire.	Makes tactically smart trades between personal safety (moving to cover & concealment while shooting back) versus moving to cover & concealment then returning fire. *Never accept defeat.* Soldier recognizes returning fire while moving to cover decreases the probability of becoming a casualty.	Tension between taking cover & returning fire.
Reduced need for buddies to deploy because Soldier kills or suppresses the enemy. If the unit does deploy the duration of the deployment is reduced allowing the unit to continue its mission.	Acts with responsibility to fellow Soldiers by immediately opening fire to kill or suppress enemy & seeking cover. Demonstrates perseverance in the face of the enemy. *Never quit.* Soldier recognizes quickly resolving the contact & minimizing the need to deploy allows mission resumption.	Tension between leaders & followers. Leaders more likely to think of consequences to the unit.
Increased likelihood of contact being terminated in favor of friendly force because the Soldier gains cover & a stable firing position to place more accurate fire on enemy.	Dependent on fellow Soldiers to augment fire to kill or suppress enemy. Soldier does part for unit survival. *Never accept defeat & Never quit.* Soldier recognizes cover & stable firing position increase chance of not becoming casualty.	Effective enemy fire that suppresses the Soldier & unit into inaction.

Soldier deploys in tactical formation

Tactical Implications	Attributes of Warrior Ethos	Friction
Increased probability of survival because Soldier performs 3-5 second rush, combat roll & other individual movement techniques (IMT) that prevent him from being hit. Soldier returns fire while performing IMT.	Makes tactically smart trades between personal safety (moving to cover & concealment while shooting back) versus moving to cover & concealment then returning fire. *Mission first.* Soldier recognizes movement under fire is not possible without applying IMT. Soldier also recognizes risk to self & unit by not moving is being decisively engaged or pinned down.	Uncoiling from the current formation, a vehicle, or aircraft with the right equipment requires practice, rehearsal & discipline.
Reduced probability of friendly casualties by performing IMT while engaging the enemy.	Makes tactically smart trades between personal safety (moving to cover & concealment while shooting back) versus moving to cover & concealment then returning fire. *Never accept defeat & Never quit.* Soldier recognizes part of reason units move & fight using movement technique, drills & signals is to prevent fratricide.	IMT is physically exhausting.
Soldier deploys with a buddy & performs fire & movement to kill or suppress the enemy.	Acts with responsibility to fellow Soldiers by immediately opening fire to kill or suppress the enemy & seeking cover. Demonstrates perseverance in the face of the enemy. *Never quit.* Soldier recognizes a buddy team is essential to performing fire & movement & fire & movement is foundation for maneuver.	Sustaining buddy teams is tough to accomplish over long periods of time. Unit turnover, reassignment & attrition work against the buddy team.

Soldier reports contact

Tactical Implications	Attributes of Warrior Ethos	Friction
Increased likelihood of contact being terminated in favor of the friendly force because Soldier reports contact to higher. This is essential if	Dependent on fellow Soldiers to augment fire to kill or suppress enemy. Soldier does his/her part for the unit's survival. Demonstrates	Between fighting & reporting.

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leader is incapacitated & cannot report contact to next higher leader/commander. If friendly unit can't gain fire superiority other friendly units or fires must be brought to bear to win the fight.	perseverance in the face of the enemy. *Never quit & Never leave a fallen comrade.* Soldier recognizes leaders/commanders must know that a contact is occurring to influence the fight.	

Soldier fights through the contact

Tactical implications	Attributes of Warrior Ethos	Friction
Increased likelihood of the contact being terminated in favor of the friendly force because the enemy is killed captured or forced to withdraw.	Dependent on fellow Soldiers to augment fire to kill or suppress the enemy. Soldier does his/her part for the unit's survival. *Never accept defeat.* Soldier recognizes unit will continue to be diverted from original mission & under threat until contact is completed.	Physical exhaustion & wounds.
Reduces the duration of the contact by ensuring all enemy are killed, captured or forced to withdraw.	Prioritizes tasks for mission accomplishment by clearing enemy from zone/sector. Exhibits Army Values of Loyalty to unit & other Soldiers; & Personal Courage by facing fear & danger. Demonstrates perseverance in the face of the enemy. *Never quit.* Soldier recognizes contact will continue until enemy is killed or neutralized. Unit will continue to be diverted from original mission & under threat until contact completed.	Physical exhaustion & wounds.

Soldier consolidates and reorganizes

Tactical Implications	Attributes of Warrior Ethos	Friction
Increased probability that all enemy are cleared from the zone/sector.	Dependent on fellow Soldiers to augment fire to kill, capture or force the withdrawal of the enemy. Soldier does his/her part to complete contact favorable to friendly force. *Never quit.* Soldier recognizes that consolidation & reorganization must take place before resuming the original mission.	Physical exhaustion, wounds, confusion & disorganization caused by casualties.
Reduces the risk of counterattack by ensuring no enemy capable of resisting remains in the zone to perform a local counterattack.	Prioritizes tasks for mission accomplishment by clearing enemy from zone/sector. Exhibits Army Values of Loyalty to unit & other Soldiers; & Personal Courage by facing fear & danger. Demonstrates perseverance in the face of the enemy. *Never accept defeat.* Soldier recognizes unit most vulnerable to counterattack during consolidation & reorganization & does part to secure unit.	Physical exhaustion, wounds, confusion & disorganization caused by casualties.
Increases the probability that friendly casualties are treated & evacuated without interference from the enemy.	Acts with responsibility to fellow Soldiers by immediately providing security to the wounded. *Never leave a fallen comrade.* Soldier recognizes the best medical assistance that he can provide to his wounded comrades is to ensure medical treatment & evacuation is not interfered with by the enemy.	Physical exhaustion, wounds, confusion & disorganization caused by casualties.

Soldier continues the mission

Tactical Implications	Attributes of Warrior Ethos	Friction
Increased probability that the original mission of the unit can be resumed because favorable conclusion of the contact.	Prioritizes tasks for mission accomplishment by transitioning back to original mission unless relieved of that mission by higher. *Mission first*	Physical exhaustion, wounds, confusion & disorganization caused by casualties.

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	& *Never quit.* Soldier recognizes that enemy contact must not stop unit from performing its assigned mission.	

This same procedure of identifying the supporting tasks of each Warrior Drill, then specifying the behavior consistent with Warrior Ethos can be applied to each of the other eight drills identified by the Task Force Soldier. The supported tenets of Warrior Ethos and behavior exemplifying Army Values can be identified, as well as the potential friction or barriers to performance of these tasks. Appendix B contains examples of this material and shows how selected drills can be broken down into component parts.

Literature Based Needs Analysis

The preceding analyses of Warrior Drills, Tasks, Attributes and Desired Responses provide a foundation for development of training interventions which can be used to further inculcate Warrior Ethos. A disciplined process for motivating functional solutions from such functional area analyses has been described in the JCIDS. A key step in this process is the Functional Needs Analysis (FNA) which describes capabilities gaps in operational or broad effects-based terms, but also considers relevant science and technology developments. A scientific perspective helps identify key attributes of a capability or capabilities that would resolve the issue in terms of purpose, tasks and conditions. This description should address the elements of time, distance, effects and obstacles to overcome. These descriptions also enable the development of measures of effectiveness (CJCSM 3170.01, 2003). Connections to the relevant literature and the workflow process are depicted in Figure 3.
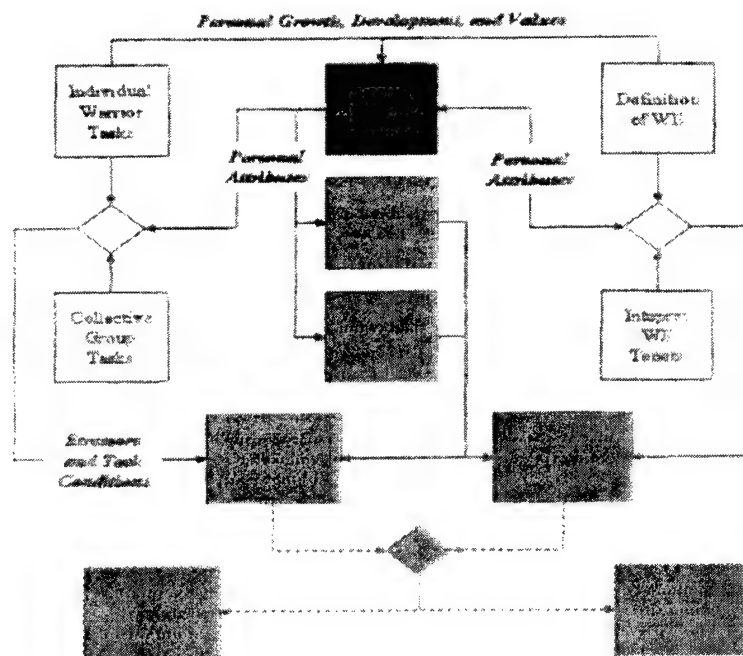

Figure 3. Early process flow and task interrelationships.

Theories and Experimental Paradigms in Human Learning and Development

There are two closely related objectives of measurement described. One is to assess the effects of training interventions on Warrior Ethos. The other (to be discussed later) is to assess the efficacy of the training intervention. There is a large body of work in the social and behavioral sciences that is relevant to a development and assessment of a training intervention for Warrior Ethos. Representative lines of research as well as that of theorists held in the highest esteem for decades have been reviewed. Maslow (1987) and Rogers (1969), for example, provide a solid foundation for consideration of motivation, especially relevant because of their treatment of the multiplicity of motivations that influence an individual's behavior at any point in time. This work is complemented nicely by Bloom's taxonomy of intellectual behavior (e.g., Bloom et al., 1956) which describes three overlapping domains: cognitive learning, psychomotor learning, and affective learning. Together, these theories emphasize the importance of addressing learning on a number of levels and along a number of dimensions.

Rogers (1969) also provides useful guidance on the relationship between motivation and *experiential learning*, in which the learner has a sense of involvement through active participation in the learning, and in which learning to learn is more explicit. Knowles (1975) also is important in this respect, emphasizing that in learning in adults, the learner is self-directed and exploratory, instructors act more in the role of facilitators, and curricula are more problem-centered and process oriented.

There is great emphasis on more holistic theories of learning which begin with a non-reductionistic theoretical commitment to address learning in a meaningful context (e.g., outside the laboratory). Lewin (e.g., 1939, 1948) provides a *Gestalt* treatment of learning which emphasizes the totality of the situation. Gestalt theory thus places much greater emphasis on understanding interrelationships among individuals and between the individual and the environment as the most important influences on learning. Key constructs are (a) *interdependence* according to which common goals are more important than interpersonal similarity in group formation, and (b) task interdependence according to which powerful group dynamics are set up when members of a group are dependent on one another.

More recent theoretical traditions growing out of the Gestalt tradition are ecological psychology (e.g., E. Gibson, 1969; J. Gibson, 1977), situated learning (e.g., Lave & Wenger, 1991) and social learning (e.g., Bandura, 1997). The Gibsons developed a theory for perceptual learning according to which there is increasing elaboration and refinement in one's understanding of the consequences of one's actions or the capabilities of one's perception and action systems (i.e., perception of *affordances*). Perception of affordances emphasizes inter-relationships (reciprocal constraints) between the individual and the environment and reciprocal

constraints between perception and action. Lave provides a complementary perspective which emphasizes the social context in which learning takes place. Both theories emphasize the concrete aspects of learning during interactions with one's surroundings along with the serendipitous learning that emerges even when such exploration is unintentional. Bandura's work dovetails nicely with that of the Gibsons and Lave by emphasizing active learning in context. Key constructs from Bandura's work are: (a) *self-efficacy* which addresses the potency of one's beliefs or understanding about one's own capabilities to influence a situation; and (b) the role of values in *modeling* according to which one is more likely to adopt a modeled behavior if it results in outcomes one values, if the model is similar to the observer and has admired status, and if the behavior has functional value.

These paradigms for understanding learning and development have guided the review and analysis of Warrior Ethos and Army training. In particular, they provided constraints on the development of training packages. In addition, each of these theories has generated a significant body of empirical research that can simplify the complex task of developing empirical measurements to assess the effects of the interventions.

There are academic (e.g., psychological and philosophical) differences between these theories with respect to the nature of knowledge acquisition (i.e., epistemology) and with respect to the nature of reality itself (i.e., ontology). In our view, these differences are inconsequential for a training intervention. At the same time, there is a common theme across these theories, one that is quite different from most theories of learning and conditioning developed from laboratory research. This theme of *active learning in context* has profound implications for development and assessment of a Warrior Ethos training intervention.

Assessments

With respect to the assessment of these interventions, it is valuable to leverage theory and best practices in program evaluation. One source of representative best practices in the commercial sector, and relevant to the military sector, is from Kirkpatrick (e.g., 1998). A key point from his work is that programs should be evaluated on a number of levels, at various levels of abstraction, and with respect to nested organization objectives. Kirkpatrick recommends four levels of evaluation, which he refers to as Reaction (Level 1), Learning (Level 2), Behavior (Level 3), and Results (Level 4). Kirkpatrick emphasizes that each level in this hierarchy is important in its own right and has an impact on the next level. Higher levels of evaluation are more difficult and time-consuming, but they also provide information that is more valuable.

Kirkpatrick's Level 1 is important because it both assesses and fosters Soldier acceptance. Valuable insights often can be gained by eliciting feedback from Trainees about the perceived relevance and value of a training program. Such feedback may lead to changes in the training intervention or it may lead to better education about the relevance, importance, and objectives of the intervention. Moreover, it lets Trainees know that the trainers and program managers value their participation in and contributions to the program. Finally, the data from Level 1 evaluations links program stakeholders and decision makers more closely with the Soldiers who are the target of the program.

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Kirkpatrick's Level 2 reflects the three things that instructors in a training program can teach: knowledge, skills, and attitudes (KSAs). Data on learning can be valuable because no change in behavior can be expected unless one or more of these learning objectives have been accomplished. It is also possible that learning has taken place even if no changes are revealed in measurement of the target behavior. Organizational or situational factors may prevent improvement in Warrior Ethos, for example, from manifesting itself in *desired responses* in a particular Warrior Drill. Such information would suggest different changes to the training intervention than those motivated by the absence of any observed effects on learning (e.g., improvement in Warrior Ethos).

Kirkpatrick's Level 3 is often the most important level of evaluation because it attempts to get at the effects of an intervention on the objectives that are the foundation of the organization. What does the organization produce, what does it achieve, why is someone willing to pay for it? Level 3 is complex in that organizations often have nested objectives: objectives that differ with respect to level of abstraction as well as antecedent objectives that are a means to the achievement of subsequent objectives. One must carefully consider what to measure and when. Transfer of training also becomes an issue at Level 3. Changes in behavior (e.g., as observed in IET) that really are due to a change in learning (Level 2) (e.g., a change in Warrior Ethos) should be expected to have measurable effects in other phases of training (e.g., Advanced Individual Training). Such effects may be due to skills that are common or closely related in the two phases of training. The behavioral changes also may be due to learning to learn: learning in the earlier phase of training that makes the Trainee a better learner in subsequent phases of training.

Kirkpatrick's Level 4 gets closer to the bottom line for an organization. How well or cost-effectively does the intervention achieve the objectives of the organization? For example, to what extent and at what cost does inculcation of Warrior Ethos make Soldiers better Warriors, help the Army fight better battles, or help the Nation win wars? It is always the case in program evaluation that some of these questions are practically impossible to answer. Other questions can be addressed but may require years of data collection to achieve sufficient analytical power. Even when this level of measurement is not practical in evaluation of a given program, it should be considered as context for a well-grounded plan to evaluate at Levels 1-3.

There is another level of evaluation that can be added to Kirkpatrick's four levels. Chapnick (2001) recently suggested that a fifth level be added to get at the individual's motivation to learn. This level thus places the individual on par with the organization in program evaluation. In particular, Chapnick recommends a Level 5 that assesses *higher calling*. Higher calling is especially relevant to Warrior Ethos because, while it focuses attention on critical issues pertaining to the motivational potential of an individual beyond the current task (e.g., at the level of personal attributes), it also links such motivation with the identity and purpose of a group or community. Higher calling thus is relevant to program stakeholders because it gets at the organizational characteristics that they may hold most dear, even if some of them are only value added to the organization. With respect to Warrior Ethos, such characteristics include fostering high character, deep moral courage, loyalty to comrades, and dedication to duty. Such core values are essential to but also transcend, for example, the objective of winning the Nation's wars.

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The next step in the process is analogous to a JCIDS Functional Solution Analysis (FSA). An FSA is similar to an operationally based assessment of potential DOTMLPF approaches to solving needs identified in the FNA. These needs are inputs to the FSA and the FSA's outputs may be seen as possible answers to needs, including "in order of priority: integrated DOTMLPF changes; product improvements to existing materiel or facilities alone; adoption of interagency or foreign materiel solutions that have limited non-materiel DOTMLPF consequences; and finally, new materiel starts that have limited non-materiel DOTMLPF consequences" (CJCSM 3170.01, 2003, A-3).

With respect to the Warrior Ethos, an example of the results of an integrated DOTMLPF approach is that which postulated the Leader Reaction Course (LRC), in continuous use from World War II to today, as a potential candidate solution area for further inculcation of Warrior Ethos by means of a Warrior Reaction Course. The LRC is a set of problem solving situations in which the intent is less to actually solve the problem, and more to understand the processes involved in facing and overcoming unexpected challenges using teamwork. The current LRC is malleable for the purpose with significant change in the tasks, conditions and friction necessary to draw out behavior consistent with having Warrior Ethos. The LRC is just one possible intervention. Similarly, collective training events at BCT in the form of Situational Training Exercises (STX) may be introduced to be used to assess Warrior Ethos. A Warrior Reaction Course may be developed in parallel to pursuit of an option for an STX solution. After Action Reviews will be a key component of any intervention.

Any AARs conducted during events in BCT will link training and education and will have direct implications for Leadership, Personnel, and Facilities. The traceability of interventions and any impact on Warrior Ethos will be most apparent in the AAR. For this reason, the focus is on paradigms which will guide the FSA and, thus, organize the collection and analyses of data from field trials in which training interventions will be demonstrated.

Theories and Experimental Paradigms in Human Learning and Development

While striving to meet operational objectives, the goal is to ground the training system in work on human performance which has deep roots in the theories of learning and development mentioned above. This provides progress toward innovative training that is not only responsive to operational needs, but that is also likely to be truly effective due to its firm basis in empirically validated approaches to learning. More specifically, inspiration for training system design comes from a mix of sources including Cognitive Work Analysis (e.g., Rassmussen, Pejtersen & Goodstein, 1994; Vicente, 1999), novel theories of human performance and development (e.g., Kelso, 1995; Thelen & Smith, 1994), and classic approaches to learning and education (Gibson, 1969; Vygotsky, 1978).

The Cognitive Work Analysis (CWA) approach has been developed to inform and structure the design of novel socio-technical systems. It is a relatively new approach to work analysis and design that focuses on human-system integration requirements. Increasingly, this framework for analysis is being applied to the design of modern military systems that are heavily

loaded on cognitive and team operations (Burns, Bryant & Chalmers, 2000; Naikar & Sanderson, in press; Sanderson, Naikar, Lintern, & Goss, 1999). It has also recently been adapted to the design of military training systems (Lintern & Naikar, 1999, 2000).

From a training perspective, the key insight from CWA is the design of systems that enable adaptive behavior. By way of analogy, the goal of CWA is to provide solutions that are "maps" rather than "directions" (Vicente, 1999). Directions give specific roads to follow to get to a destination. However, if an unexpected situation arises (e.g., a closed road), the fragility of directions is readily apparent. In contrast, a map provides guidance in either case. While the map may be less direct and more challenging, it is also more robust. This robustness is critical, for it is crucial to develop systems that work adaptively across a range of situations. An important assumption here is that such approaches to systems design apply as much to organizations and curricula as they do to technology.

Similarly, the training approach is designed to facilitate active, exploratory-based learning that enables and fosters flexible behavior. Building on Vicente (1999), Figure 4 illustrates this idea through the representation of an abstract space of constraints that influence performance (e.g., environmental factors, task factors, behavioral factors, etc.). On the left hand side is the "directions" version of training: To get from point A to point B, the student is told to follow a rule, which is to do f (A). Potentially, this strategy is effective and very expeditious. However, the student may only learn the rule, which may not apply to the wide variety of conditions and challenges that one is likely to meet in operational settings. In contrast, the right hand side shows the "map" version of training. In this case, the instructor creates a situation in which a range of solutions (the bounded space) are viable and permits the student to discover their own solutions within this space. In this case, the student has the potential to not only discover the "rule," but also to build the processes that can support a range of solutions. In principle, this strategy enables adaptive performance and learning through discovery.

In the case of Warrior Ethos, for instance, the student has the potential to learn a range of behavior and strategies that are consistent with the tenets of Army values that will be robust across a range of operational conditions. The student does not simply learn the rule (e.g., "I will never accept defeat"), but rather, the student discovers a range of strategies that enable him to succeed in the face of adversity and changing conditions. Through this process, the student discovers the KSAs that support, shape, and realize the emergence of the "value" of never accepting defeat.
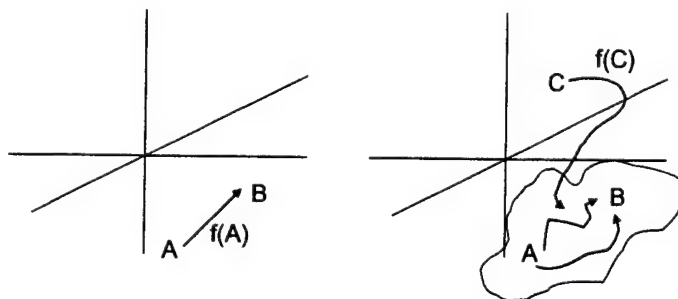

Figure 4. The "directions" view of training system design (left) and the "map" view of training systems design (right).

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This perspective relies heavily on constrained exploration and guided discovery as the basis for adaptive and robust learning. This approach is based on Gibson's notion of exploration (e.g., E. Gibson, 1991; see also E. Gibson et al., 1987; Riccio, 1993; Riccio et al., 1997; Thelen & Smith, 1994; Warren & Riccio, 1985) which emphasizes that exploration is ubiquitous and nested within all forms of behavior, sometimes in very subtle ways. Exploration, in this sense, is informative in that it reveals constraints on the behavior within which it is nested and, thus, is useful only to the extent that it is constrained and nested.

The training goal is to facilitate the individual discovery of solutions. However, note that despite the emphasis on exploration, there is no intent to negate or deemphasize the central role of the instructor. Instead, effective training needs to encourage exploration, while efficiently guiding students to the relevant sources of information and behavior. Rather than simply providing solutions, the role of the instructor is one that fosters and structures the training environment to support discovery. In the case of Figure 4, the role of the instructor is to create an environment and support a student in remaining in that part of the space in which a range of acceptable solutions are possible (the bounded space on the right hand side). If a student wanders, for instance, to point C, the instructor's role is to identify the error and create a trajectory that moves the student back toward the space of acceptable solutions (f(C)). Thus, the instructor's role is to create the bounded domain for exploration and to make sure that students stay in that bounded domain.

Over time, this type of educational system exploits the development of stable (mutually reinforcing) collective behavior patterns. Through the repeated creation of the bounded domain, the desired behavior becomes stabilized, or learned, and have the potential to transfer beyond the training domain. In the case of Warrior Ethos, through the mutually reinforcing actions of the instructor, environment and fellow teammates, the student discovers the KSAs that support behaviors that is in accordance with the tenets of Warrior Ethos (e.g., "I will never quit"), and through the repeated exposure, the desired skills are stabilized (learned). This view is consistent, therefore, with the theoretical perspective that learning involves the "stabilization" of new patterns of behavior that persist over time (e.g., Thelen & Smith, 1994; Zanone & Kelso, 1991).

A critical instructional issue, then, is the creation of spaces that support the stabilization of behavior. As an example for discovery based learning of Warrior Ethos, work in team training is relevant. Once again, the instructor's goal is to create a bounded region for learning and to permit active discovery within that region. Yet, a central question, and one that will guide curriculum development, is: How can those learning spaces be created? For example, a critical aspect of effective teamwork is the development of a collective vision, what some researchers term the "shared mental model," to facilitate coordination. Communication patterns, monitoring of teammates, and provision of assistance when needed are critical aspects of teamwork (Smith-Jentsch, Johnston, & Payne, 1998; Smith-Jentsch, Zeisig, Acton, & McPherson, 1998), and shared mental models have been hypothesized to be a critical part of such coordination. Consequently, to develop shared mental models, Salas, Dickinson, Converse, and Tannenbaum (1992) created simulated communication failures in which teammates were required to rely upon their expectations of their teammates' actions in order to succeed, thereby reinforcing skills that develop and utilize shared mental models. This manipulation – the communication failure – created the learning space.

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Although this precise method (communication failure) may or may not be employed in future work, it is crucial to realize the link between skills such as monitoring and providing assistance, and the realization of Warrior Ethos. In fact, the goal for Warrior Ethos is to develop behavior that is consistent with a shared understanding, or "mental model," of core Army values. Consequently, this example provides insight into the creation of relevant learning spaces. Through such methods, students are forced to develop solutions that reinforce key skills.

Application of Training and Education Approaches to the Inculcation of Warrior Ethos

In addition, beyond creating the learning space, to support the student fully, the instructor also needs to become sensitive to when and how to intervene. This equates to nudging the student back into the range of acceptable solutions. Accordingly, this aspect of the work will appeal to and build on work in the development of automated coaches (intelligent tutoring systems) and automated AAR systems (e.g., Freeman, Diedrich, Haimson, Diller, & Roberts, 2003; MacMillan, Roberts, Diller, Diedrich, & Deutsch, 2002). Although the Warrior Ethos effort will not involve automated training, issues of when and how to coach remain relevant. The automated tutor and AAR focused on communications. First, the tutor system capitalized on rules regarding when to coach. Second, the system followed different strategies regarding how to provide feedback such as *warning* the student of error, *directing* the student to issue a type of communication, *modeling* a communication for the student, and stating a rule. Critically, this work exploited the idea that not all coaching actions are appropriate for all errors and that some errors should be addressed immediately whereas others can be addressed in the AAR.

More generally, there is a wide range of literature on innovative educational techniques to draw on to guide training system development. For instance, seminal studies and reviews of the feedback literature (e.g., Bangert-Drowns, Kulik, & Kulik, 1991) have examined error flagging or alerts (Reiser, 1990), rich, explanatory feedback (Rouse, Rouse & Pellegrino, 1980), and several forms of feedback in between (e.g., Bonar & Cunningham, 1988, Corbett & Anderson, 1991, Shute, 1991). The decision to provide or withhold potentially appropriate real-time feedback until the AAR may be determined partially in accordance with a set of criteria that includes both the recency and the importance of the error (Freeman et al., 2003). Anderson (e.g., Corbett & Anderson, 1991) is often cited for the finding that immediate feedback supports learning better than delayed feedback. Yet, such feedback may not be beneficial when the training concerns skill integration, strategy choice, self-monitoring, and/or error correction. In these cases, it may be better to delay feedback (Lewis & Anderson, 1985) or deliver immediate feedback on a *fading* schedule (Schmidt & Bjork, 1992), that is, with decreasing frequency as expertise grows (i.e., over time or practice trials). In fact, a rich body of fieldwork indicates that trainers should provide increased support to learners early in training and gradually remove that support to test and train proficiency as expertise is achieved (Lave & Wegner, 1991). In later work, the applicability of these techniques to the training of Warrior Ethos will be considered.

In total, building on this work, as part of training system development, training strategies will be developed in accord with established theories of instruction and the goal of enabling constrained exploration and guided discovery in revealing the connection between what individuals should do and what they should be consistent with the tenets of Warrior Ethos. More specifically, the educational system will:

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- Explore how to create learning spaces that enable the discovery and stabilization of the KSAs through which Warrior Ethos emerges.
- Develop a system that guides instructors regarding when and how to provide feedback to shape discovery and maximally affect training effectiveness.
- Develop methods to support AARs that structure and present critical information and support the instructors and students in exploration of the key issues.

Collectively, this work will enable the creation of a potentially innovative training system. Combined with earlier work, this effort will result in a unique union of operational expertise with theory.

Spiral Development of Training Interventions

Future technical objectives follow directly from the approach wherein the widely disseminated definition of Warrior Ethos (*mission first - never accept defeat – never quit – never leave a fallen comrade*) is broken into its component parts. The actual behavior associated with each of the tenets is defined in terms of whether they do or do not show behavior consistent with Warrior Ethos.

Warrior Ethos will be refined by further identification of specific behavior consistent with the definition, training support packages (TSPs) will be developed and tested for use thoughout initial military training and in other venues. This will require an iterative approach of test and refinement, starting with an effort to determine Soldier attitudes toward the concept of Warrior Ethos, how it is being brought into focus in current training programs, and how well Soldiers accept the new way of looking at the concept (Warrior Ethos broken into tenets with associated behavior).

Trial interventions will be developed, and then tested in several environments, starting at the Reception Station with the most basic levels of IET. Interventions may occur during field exercises, or in pre-training environments, or new venues (such as a Warrior LRC) may be developed. Based on the feasibility of these interventions, and the results thereof, TSPs can be updated and plans implemented to "train the trainer." Successful completion of these steps could lead to formulation of a commercialization plan targeted to other professions with stressful operational environmental conditions similar to those routinely faced by Army personnel. The overlapping objectives are simplified as:

- Refine the operational definition of Warrior Ethos
- Elicit user feedback
- Develop and refine trial interventions
- Finalize train-the-trainer packages
- Ensure materials are suitable for multiple venues
- Refine materials for commercialization

Although Warrior Ethos will always be extremely difficult to measure, or possibly, even to observe, there are ways to incorporate awareness of it into existing training. The Programs of

Instruction (POIs) for IET and advanced individual training, whether BCT or OSUT, are relatively fixed, and not amenable to change, but it is possible to adapt the existing training to reflect Warrior Ethos. Current training exercises, drills and events can be approached from a slightly different way from the typical approach, thereby providing an intervention opportunity.

Reception Station – Soldierization. The Reception Station represents the initial time in the Army for almost all new Soldiers. Typically, the days are regimented, and most activities are designed to make all Trainees look and act alike. Their individual identities and personalities are temporarily removed in the attempt to produce the basic Soldier. However, during portions of the Trainee's day, activities, although regimented, can be shaped to include time to listen – time during which attending Drill Sergeants can begin to instill Warrior Ethos in Trainees. Senior Drill Sergeants can share vignettes, and to describe behavior consistent with Warrior Ethos.

BCT Tasks, Drills, and Conditions. Much as the Trainee's schedule is well-defined, daily events within BCT are standardized, with little room for expansion. However, trainers can learn alternative ways of thinking about the basic battle drills, and how to recognize examples of good Warrior Ethos. They can be shown examples of failure to exhibit Warrior Ethos, or how to recognize and increase likelihood of behavior consistent with Warrior Ethos. No new tasks are developed; Warrior Ethos becomes a way of thinking about the component behavior of both simple and complex tasks. Warrior Ethos can occur in battle drills, road marches, STXs, or in garrison.

BCT After-Action Reviews. Similarly to activities described for the Reception Station and during, for example, battle drills, or a Warrior Reaction Course, the AAR can be structured in such a way as to highlight Warrior Ethos and the tenets thereof. Trainers can be provided with materials to assist in AAR development.

Design Measurement Techniques

The details of observation, measurement, and analysis can be developed in response to emerging needs. The primary goal would be to develop measures that both enable instructors to assess student progress on attaining Warrior Ethos and that support evaluation of the training system itself. These measures are a critical part of the feedback processes that serve to guide and facilitate discovery based learning.

Performance measures associated with the learner's responses to events can be used to provide performance feedback to the individual learners, to assess whether learners have acquired the knowledge and skills for which the training was designed, and to assess whether the training has successfully met its objectives. This approach to a training system for Warrior Ethos starts with the identified training objectives and competencies used as the basis to measure development. The goal would be to map these measures to methods that instructors can use to assess students and guide student behavior into the spaces in which a range of acceptable solutions are possible. This work will result in measures that support student learning and instructor assessment.

Conduct Field Trials

Field trials could be conducted to determine the most effective curriculum and to refine a Warrior Reaction Course or a Warrior STX. A short curriculum for use by Drill Sergeants at the Reception Station and at both Fort Benning and Fort Jackson could be used to assess training. The behavior of control groups that receive no introduction to Warrior Ethos at the Reception Station and experimental groups that do can be compared BCT.

Summary

The Phase I SBIR effort on Enhancing Warrior Ethos in Initial Entry Training resulted in a better understanding of Warrior Ethos. The analyses were conducted by a team of scientists and operational subject-matter experts working in close collaboration throughout every phase of the project—starting with development of traceable conclusions about Warrior Ethos, through a literature-based review of relevant scientific concepts, to development of an approach to training and assessment.

The analyses and recommendations focused on training interventions for Warrior Ethos in BCT. Although several other venues were considered, the conclusion was that enlisted IET could benefit the most from Warrior Ethos training. "Soldierization" begins at the Reception Station. Thus, trial interventions should focus on the reception station and BCT in a linked approach to developing Warrior Ethos in IET. This synchronizes with the Army's desire to start developing Soldiers (warriors) from Trainees rather quickly in IET. This approach would fit nicely with the pre-commissioning and post-commissioning training given to officers in the Basic Officer Leader Course.

A focus on IET identified a path for generalizing training interventions for Warrior Ethos to a wide range of scenarios and a broader population of Soldiers than what is feasible to consider in Phase II. In particular, the Warrior Drills and Warrior Tasks are seen as core training activities for which concrete and general interventions can be developed. Soldier attitudes and values should be understood in terms of their manifestations in interactions among Soldiers, interactions between Soldiers and the environment, and the implications of these part-whole relationships for performance of Warrior Drills. Neither the Warrior Drills nor the Warrior Tasks were sufficiently specific, however, to provide guidance for analysis of these part-whole relationships and their implications. Consequently, more specific *desired responses* believed by operational experts to exemplify Warrior Ethos were identified. The concurrent task was to assist the operational experts in identifying relevant behavior and to understand why the operational experts judged certain responses to be consistent and others to be inconsistent with Warrior Ethos. This collaborative process led to postulation of a set of *Warrior Attributes* as more fundamental personal characteristics and dispositions which foster Warrior Ethos.

These became the initial description of relationships between Warrior Drills, Warrior Tasks, desired responses of individuals in Warrior Drills, and Warrior Attributes with respect to the potential for inculcating Warrior Ethos in a training intervention. These relationships begin to elucidate the factors influencing success, failure, and personal development. In particular, skill acquisition and proficiency, an important part of BCT, is influenced by attitude toward

training, the trainee's understanding of the significance of the acquired skill, and the *friction* imposed by the context in which skills must be utilized. This led to an emphasis on friction as a key target for training interventions.

Warrior Tasks reveal specific skills which are necessary to achieve collective objectives of the Warrior Drills. Warrior Attributes reveal what the individual must draw upon or exemplify to overcome friction. Opportunities for overt behavioral measures are provided in the Warrior Tasks. Warrior Attributes, on the other hand, provide fertile ground for development of subjective measures pertaining to perception, cognition, and emotion in Warrior Tasks and Drills. This dovetails nicely with the insights these and related concepts have provided about training interventions. In a principled approach to validation and verification of the training package there are: training interventions as potential *independent variables*, skills and attitudes as potential *dependent variables*, and relationships among them in the context of Warrior Ethos as empirically testable *hypotheses*. The result is a foundation on which to develop a paradigm for assessment of Warrior Ethos and continued refinement of the concept. While such a paradigm has obvious value in the application of the social and behavioral sciences to this human dimension of the Army transformation, it is also essential in a principled approach to continual improvement of the associated training interventions.

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Appendix A
Acronyms

AAR	After Action Review
ARI	U.S. Army Research Institute for the Behavioral and Social Sciences
AWO	Air Weapons Officer
BCT	Basic Combat Training
CMH	Congressional Medal of Honor
CSA	Chief of Staff of the Army
CWA	Cognitive Work Analysis
DA	Department of the Army
DOTMLPF	Doctrine, Organization, Training, Materiel, Leader Development and Education, Personnel, and Facilities
EXROE	Exercise Rules of Engagement
FAA	Functional Area Analysis
FM	Field Manual
FNA	Functional Needs Analysis
FSA	Functional Solution Analysis
GPS	Global Positioning System
IED	Improvised Explosive Device
IET	Initial Entry Training
IMT	Individual Movement Techniques
JCIDS	Joint Capabilities Integration and Development System
KSA	Knowledge, Skills and Abilities
LRC	Leader Reaction Course
MEDEVAC	Medical Evacuation
OSUT	One Station Unit Training
POI	Program of Instruction
RPG	Rocket Propelled Grenade
SASO	Support and Stability Operations
SBIR	Small Business Innovative Research
SITREP	Situation Report
SPOTREP	Spot Report
SSAN	Social Security Account Number
STX	Situational Training Exercise
TRADOC	Training and Doctrine Command
TSP	Training Support Package
UCMJ	Uniform Code of Military Justice
USAIS	United States Army Infantry School
USMA	United States Military Academy
WRC	Warrior Reaction Course
WGI	Wexford Group International

Appendix B
Warrior Drills

The main text provided details of Warrior Drill 1, React to Contact. The supporting tasks and observable behavior consistent with Warrior Ethos are shown in examples for Drill 2 and Drill 8. For the remaining drills, only supporting tasks are provided here.

Warrior Drill 2 - Avoid Ambush

Supporting Warrior Tasks

React to direct fire (dismounted and mounted)	Engage targets with an M240B machinegun
React to indirect fire (dismounted and mounted)	Engage targets with an M60/M249 machinegun
Move over, through, or around obstacles (except minefields)	Engage targets with an M2 machinegun
Prepare /operate a vehicle in a convoy	Engage targets with an MK19 machinegun
Determine location on ground (terrain association, map, and GPS)	Correct malfunctions of a machinegun
Perform movements techniques during an urban operation	Engage targets during an urban operation
React to unexploded ordnance hazard	Employ hand grenade
Navigate from one point to another (dismounted and mounted)	Move under direct fire
Qualify with assigned weapon	Select temporary fighting position
Correct malfunctions with assigned weapon	Use visual signaling techniques
Engage targets with weapon using a night vision sight	Perform voice communications (SITREP/ SPOTREP)
Engage targets using an aiming light	

Observable Behavior Consistent with Warrior Ethos - Desired Response: Soldier/Leader employs the four principles of patrolling (Security, Planning, Reconnaissance, and Control) to avoid ambush.

Soldier/Leader makes a plan for movement		
Tactical Implications	Attributes of Warrior Ethos	Friction
Develops a tactically sound plan that is disseminated to all participants. This includes organization for combat, preparation of equipment & vehicles if involved & rehearsal of immediate action drills in the event of an ambush.	Prioritizes tasks. Focuses planning on the enemy most likely & most dangerous courses of action & how he operates. Makes tactically smart trades between each of the four principles of patrolling. Exhibits the Army Values of Loyalty to the unit & other Soldiers; & Personal Courage by facing fear & danger. *Never accept defeat.* Soldier realizes avoiding an ambush is art & not science.	Easier to focus plan on desires of friendly force since it is known & ignore/minimize enemy's perspective as it is ambiguous. Tension exists between avoiding ambush & performing mission assigned to unit. Avoiding ambush is not a mission itself. It is desired condition allowing primary mission to be conducted.

Soldier/Leader maintains security		
Tactical Implications	Attributes of Warrior Ethos	Friction
Increased probability the Soldier & the unit do not get ambushed. The organization for combat includes a point, flank & rear security to warn buddies & the unit of enemy presence.	Makes tactically smart trades between providing security & other tasks during movement & temporary halts to detect ambush before it is initiated by the enemy. *Never accept defeat.* Soldier recognizes maintaining security is most important of all tasks that he performs.	Tension providing 360 degree security & other tasks.
Reduced probability of friendly casualties because the enemy does not surprise the friendly force	Makes tactically smart trades between personal safety (moving to cover & concealment while shooting back) versus moving to cover & concealment then returning fire. *Never quit.* Soldier recognizes early detection of an ambush is key to avoiding this type of attack.	Tension between detecting the enemy before the ambush is initiated & reacting to contact.

Soldier/Leader conducts reconnaissance		
Tactical Implications	Attributes of Warrior Ethos	Friction
Increased probability of survival because the route, zone or area is observed before & during the mission	Prioritizes between other tasks & performing reconnaissance & security. *Mission first.* Soldier recognizes movement without 360° observation & security increases chance of ambush. Soldier recognizes risk to self & unit & does his part.	Other tasks get in the way of performing reconnaissance & maintaining security.

Soldier/Leader controls the unit		
Tactical Implications	Attributes of Warrior Ethos	Friction
Increased likelihood of contact being avoided or being terminated in favor of friendly force because Soldier/Leader controls movement of unit. Key factor is detecting suspected & likely ambush locations or situations & controlling unit by bypassing, conducting area reconnaissance of suspected or likely ambush location before moving unit through. Providing overwatch while transiting high threat area is necessary. If friendly unit is ambushed Soldier/ Leader controls unit's response to gain fire superiority. Soldier/Leader may also bring to bear other friendly units or fires to win the fight.	Dependent on fellow Soldiers to detect suspected or likely ambush locations. Demonstrates perseverance in the face of the enemy. *Never quit.* Soldier recognizes he must do his part in maintaining control should contact be made with the enemy.	Between speed, control, the primary mission of the unit & security during movement.

Warrior Drill 3 - React to Ambush

Supporting Warrior Tasks

React to direct fire (dismounted and mounted)	Engage targets with an MK19 machinegun
React to indirect fire (dismounted and mounted)	Correct malfunctions of a machinegun
Qualify with assigned weapon	Engage targets during an urban operation
Correct malfunctions with assigned weapon	Employ hand grenade
Engage targets with weapon using a night vision sight	Move under direct fire
Engage targets using an aiming light	Prepare/operate a vehicle in a convoy
Engage targets with an M240B machinegun	Select temporary fighting position
Engage targets with an M60/M249 machinegun	Use visual signaling techniques
Engage targets with an M2 machinegun	Perform voice communications

Warrior Drill 4 - React to Indirect Fire

Supporting Warrior Tasks

Perform movement techniques during urban operation	Enter a building during an urban operation
Move over, through or around obstacles (except minefields)	Navigate from one point to another (dismounted and mounted)
React to indirect fire (dismounted and mounted)	Select temporary fighting position
Determine location on ground (terrain association, map, GPS)	Use visual signaling techniques
Prepare/operate a vehicle in a convoy	Perform voice communications

Warrior Drill 5 - React to Chemical Attack

Supporting Warrior Tasks

React to chemical or biological attack/hazard	Engage targets with an MK19 machinegun
Qualify with assigned weapon	Correct malfunctions of a machinegun
Correct malfunctions with assigned weapon	Engage targets during an urban operation
Engage targets with weapon using a night vision sight	Employ hand grenade
Engage targets using an aiming light	Select temporary fighting position
Engage targets with an M240B machinegun	Use visual signaling techniques
Engage targets with an M60/M249 machinegun	Perform voice communications
Engage targets with an M2 machinegun	Decontaminate yourself and individual equipment using chemical decontaminating kits

Warrior Drill 6 - Break Contact

Supporting Warrior Tasks

React to direct fire contact (dismounted and mounted)	Correct malfunctions of a machinegun
React to indirect fire contract (dismounted and mounted)	Prepare/operate a vehicle in a convoy
Qualify with assigned weapon	Engage targets during an urban operation
Correct malfunctions with assigned weapon	Employ mines and hand grenades
Engage targets with weapon using a night vision sight	Select temporary fighting position
Engage targets using an aiming light	Use visual signaling techniques
Engage targets with an M240B machinegun	Perform voice communications
Engage targets with an M60/M249 machinegun	Perform movement techniques during urban operation
Engage targets with an M2 machinegun	Navigate from one point to another (dismounted and mounted)
Engage targets with an MK19 machinegun	React to man to man contact (level I combatives)

Warrior Drill 7 - Dismount a Vehicle

Supporting Warrior Tasks

React to direct fire (dismounted and mounted)	Correct malfunctions of a machinegun
React to indirect fire (dismounted and mounted)	Prepare/operate a vehicle in a convoy
React to contact (visual, IED, direct fire including RPG)	Engage targets during an urban operation
Qualify with assigned weapon	Employ mines and hand grenades
Correct malfunctions with assigned weapon	Select temporary fighting position
Engage targets with weapon using a night vision sight	Use visual signaling techniques
Engage targets using an aiming light	Perform voice communications
Engage targets with an M240B machinegun	Perform movement techniques during urban operation
Engage targets with an M60/M249 machinegun	Navigate from one point to another (dismounted and mounted)
Engage targets with an M2 machinegun	React to man to man contact (level I combatives)
Engage targets with an MK19 machinegun	Move over, through or around obstacles (except minefields)

Warrior Drill 8 - Evacuate Injured Personnel from Vehicle

Supporting Warrior Tasks

Prepare/operate a vehicle in a convoy	Engage targets with an M2 machinegun
React to direct fire (dismounted and mounted)	Engage targets with an MK19 machinegun
React to indirect fire (dismounted and mounted)	Correct malfunctions of a machinegun
Evaluate a casualty	Engage targets during an urban operation
Perform first aid for open wound (abdominal, chest and head)	Employ mines and hand grenades
Perform fires aid for bleeding of extremity	Select temporary fighting position
Qualify with assigned weapon	Use visual signaling techniques
Correct malfunctions with assigned weapon	Perform voice communications
Engage targets with weapon using a night vision sight	Perform movement techniques during urban operation
Engage targets using an aiming light	Navigate from one point to another (dismounted and mounted)
Engage targets with an M240B machinegun	React to man to man contact (level I combatives)
Engage targets with an M60/M249 machinegun	Move over, through or around obstacles (except minefields)

Observable Behavior Consistent with Warrior Ethos- Desired response: Soldier/unit defeats or repels the enemy, secures the site and the combat lifesaver or medic stabilizes the casualty, extracts the casualty, applies first aid to stabilize the injury during evacuation, evacuates the casualty.

Soldier/unit defeats or repels the enemy		
Tactical Implications	Attributes of Warrior Ethos	Friction
The best medical treatment begins with completing the contact so that the enemy does not continue to create friendly casualties.	Prioritizes tasks. Focuses on enemy first & casualties second. Makes tactically smart trades securing & aiding fallen comrades. Exhibits Army Values of Loyalty to unit & other Soldiers & Personal Courage by facing fear & danger. *Never accept defeat.* Soldier recognizes fight must be won before casualties can be attended.	Tension between rendering aid & defeating the enemy. Soldiers understand there is a "Golden hour" in which if treated & evacuated even the most serious casualties are likely to survive.

Soldier reports the contact and casualty

Tactical Implications	Attributes of Warrior Ethos	Friction
Provides higher leaders/commander with information to initiate a MEDEVAC mission.	Makes tactically smart trades between initiating MEDEVAC & providing first/buddy aid. *Never leave a fallen comrade.* Soldier recognizes maintaining security is most important of all tasks & reporting to higher is essential to executing a MEDEVAC.	Tension between reporting casualty & taking action to secure the site & rendering first/buddy aid & reporting.

Soldier moves vehicle to a safe area (if possible)

Tactical Implications	Attributes of Warrior Ethos	Friction
Increased probability of survival & decreased risk of the enemy interference with the extraction, treatment & evacuation of casualties.	Prioritizes between other tasks protecting the wounded. *Never leave a fallen comrade.* Soldier recognizes protecting casualty & those caring for him/her are essential to a successful MEDEVAC.	Tension between moving a disabled vehicle & extracting the casualty.

Soldier provides local security and esures the safety of combat lifesaver or medic

Tactical Implications	Attributes of Warrior Ethos	Friction
Increased probability of survival & decreased risk of the enemy interference with the extraction, treatment & evacuation of casualties.	Dependent on fellow Soldiers to perform security. Demonstrates perseverance in the face of the enemy. *Never leave a fallen comrade.* Soldier recognizes he must do his part in maintaining security during MEDEVAC.	Between assisting the injured & providing security.

Soldier stabilizes casualty and extracts the injured from the vehiile

Tactical Implications	Attributes of Warrior Ethos	Friction
Increased likelihood of the casualty surviving.	Dependent on fellow Soldiers to perform the first/buddy aid & extraction. Demonstrates perseverance in the face of the enemy. *Never leave a fallen comrade.* Soldier recognizes he must do his part in stabilizing casualty.	Between risking additional injury to the casualty during extraction & additional injury to the casualty due to secondary explosions, fire.

Soldier stabilizes the injury and moves the casualty to the casualty collection point

Tactical Implications	Attributes of Warrior Ethos	Friction
Increased probability of survival by getting the casualty to medical treatment facility during the "Golden hour"	Dependent on fellow Soldiers to perform security. Demonstrates perseverance in face of enemy. *Never leave a fallen comrade.* Soldier recognizes he must do his part during MEDEVAC.	Between assisting the injured & providing security.

Warrior Drill -9- Secure at a Halt

Supporting Warrior Tasks

React to direct fire (dismounted and mounted)	Prepare/operate a vehicle in a convoy
React to indirect fire (dismounted and mounted)	Engage targets during an urban operation
Qualify with assigned weapon	Employ mines and hand grenades
Correct malfunctions with assigned weapon	Select temporary fighting position
Engage targets with weapon using a night vision sight	Use visual signaling techniques
Engage targets using an aiming light	Perform voice communications
Engage targets with an M240B machinegun	Perform movement techniques during urban operation
Engage targets with an M60/M249 machinegun	Navigate from one point to another (dismounted and mounted)
Engage targets with an M2 machinegun	React to man to man contact (level I combatives)
Engage targets with an MK19 machinegun	Move over, through or around obstacles (except minefields)
Correct malfunctions of a machinegun	